

To: Harris County Precinct Two Commissioner Adrian Garcia
From: Katie Short, Director; Amber Weed, Chief of Staff and Policy
Director; Ramin Naderi, Analyst
CC: Mike Lykes, Mercedes Sánchez, Kris Banks, and Matt Garry with
Precinct Two; Barbie Robinson, Jennifer Kiger, and Dr. Ericka Brown
with Harris County Public Health
Date: December 13, 2022
Re: **Quarterly Memo on COVID-19 Vaccine Distribution, December
2022**

EXECUTIVE SUMMARY

In January 2021, Precinct Two requested the Analyst's Office produce a monthly memo regarding the distribution of COVID-19 vaccinations in Harris County. As of July 2022, this memo is released quarterly, a change from the previous monthly schedule in response to the slowing changes in vaccine distribution.

This memo provides an overview of the COVID-19 pandemic and vaccine distribution in Harris County. Key findings from the data in this memo include:ⁱ

- As of November 27, 2022, **64.0% (3,020,468) of individuals in Harris County were fully vaccinated.**
- As of November 27, 2022, **10.4% (494,120) of individuals in Harris County were partially vaccinated.**
- As of November 27, 2022, **25.4% (1,203,830) of individuals in Harris County had received at least one booster shot, a 6.4% increase** (from 1,131,887 to 1,203,830) from August 28, 2022.
- As of November 27, 2022, **6.3% (296,323) of individuals in Harris County had received a bivalent booster shot.**
- Between August 30, 2022, and November 29, 2022, **the number of individuals in Harris County vaccinated with at least one dose increased by 1.4%** (from 3,474,382 to 3,522,588).
- Between August 30, 2022, and November 27, 2022, **the number of individuals in Harris County fully vaccinated increased by 1.5%** (from 2,984,328 to 3,028,468).
- **Zip codes 77336 and 77090 have the fewest number of individuals per 100,000 residents fully vaccinated** (40,031 and 44,492 respectively).
- **Zip codes 77019 and 77098 have the greatest number of individuals per 100,000 residents fully vaccinated** (97,856 and 98,762 respectively).ⁱⁱ

ⁱ IMPORTANT NOTE: Not all data sums to totals reported. This is due to poor and inconsistent data reporting by providers, and because patients have not been required to disclose all demographic data. The Texas Department of State Health Services (DSHS) reports it is actively conducting county and provider-level analyses to identify if certain providers or areas are underreporting more than others for targeted data entry funding and training.

ⁱⁱ Zip code analysis excludes zip codes that report a greater number of residents vaccinated than the zip code's total population. This discrepancy is due to poor and limited data.

- The median of the median incomes of the fifteen Harris County zip codes with **the fewest number of individuals per 100,000 residents fully vaccinated is \$56,927.**
- The median of the median incomes of the fifteen Harris County zip codes with **the greatest number of individuals per 100,000 residents fully vaccinated is \$98,727.**
- The number of individuals fully vaccinated in Harris County varies by age group.
 - **84.1% (161,595) of individuals ages 75 and over are fully vaccinated;**
 - **87.1% (497,334) of individuals ages 60-74 are fully vaccinated;**
 - **82.5% (694,374) of individuals ages 45-59 are fully vaccinated;**
 - **72.4% (759,814) of individuals ages 30-44 are fully vaccinated;**
 - **62.5% (771,265) of individuals ages 12-29 are fully vaccinated;**
 - **26.8% (127,663) of individuals ages 5-11 are fully vaccinated; and,**
 - **4.7% (16,416) of individuals ages 0-4 are fully vaccinated.**
- The number of individuals fully vaccinated in Harris County varies by race and ethnicity.ⁱⁱⁱ
 - **38.9% (344,350) of individuals who identify as Black are fully vaccinated;**
 - **54.7% (1,113,642) of individuals who identify as Hispanic/Latino are fully vaccinated;**
 - **49.9% (653,522) of individuals who identify as White are fully vaccinated;**
 - **59.8% (207,961) of individuals who identify as Asian American/Pacific Islander are fully vaccinated; and,**
 - **59.2% (4,991) of individuals who identify as American Indian/Alaskan Native are fully vaccinated.**
- The demographic in Harris County with the **highest percentage of individuals vaccinated are individuals who identify as Hispanic ages 65-74 (85%).** The demographic with the **lowest percentage of individuals vaccinated are individuals who identify as American Indian/Alaskan Native ages 0-4 (2%).**
- Between January 1, 2020, and November 29, 2022:
 - **All providers in Harris County administered a cumulative 10,952,821 COVID-19 PCR tests;^{iv}**
 - **There were 977,941 positive COVID-19 cases confirmed by a PCR test in Harris County; and,**
 - **There were 8,535 confirmed COVID-19-related deaths in Harris County.**

The Analyst's Office acknowledges Harris County Public Health and the Harris County Office of Management and Budget for their significant contributions to this memo.

ⁱⁱⁱ In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo. For example, percentages of individuals of specific races and ethnicities may show reductions in percentage vaccinated from the Analyst's Office April 2022 memo.

^{iv} PCR refers to the polymerase chain reaction or nucleic acid amplification tests commonly used to test for COVID-19.

INTRODUCTION

In January 2021, Precinct Two requested the Harris County Commissioners Court's Analyst's Office (the "Analyst's Office") produce a monthly memo regarding the distribution and administration of COVID-19 vaccinations in Harris County. As of July 2022, this memo is released quarterly, a change from the previous monthly schedule in response to the slowing changes in vaccine distribution.

This memo includes data and analysis regarding COVID-19 testing, cases, deaths, and vaccine administration in Harris County. Precinct-level age, race, and ethnicity data are provided where available.

METHODOLOGY

Data utilized in this memo are from Harris County Public Health (HCPH); the Centers for Disease Control and Prevention (CDC); and Harris County's Applied Technologies Location Analysis and Statistics (ATLAS) System. Data reflect COVID-19 vaccine doses administered in Harris County by all providers from the beginning of the vaccine rollout, December 14, 2020, through November 29, 2022, and all testing, confirmed cases, and COVID-19-related death data from January 1, 2020, through November 29, 2022.

Data Collected from Harris County Public Health (HCPH)

Harris County Public Health (HCPH) is the primary data source for this memo. HCPH staff analyzes vaccine data received by the Texas Department of State Health Services' (DSHS) ImmTrac2 system. As the Local Health Authority for the County, HCPH also analyzes and receives testing, confirmed cases, and COVID-19-related death data from local health providers (including the City of Houston) and other sources. Income data provided by HCPH reflects the American Community Survey, 2016-2020 Five-Year Estimates. HCPH data and/or analysts aid in the development of all tables and figures.

DSHS advised the following via email regarding the data available on ImmTrac2:

- Providers in Texas have up to 24-hours to report doses administered in ImmTrac2, and the dashboard is updated by 4:00 pm with data reported as of 11:59 pm the previous night. This means there could be as much as a 48-hour lag between when a dose is administered and when it appears on ImmTrac2.

In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity data. DSHS reported a noticeable shift in patient demographics as a result of the corrections. For example, more patients identified as "multiracial" in DSHS following the corrections—patients may have previously been identified as belonging to a singular race/ethnic group rather than as "multiracial."¹ Demographic-level analysis in the Analyst's Office May 2022 memo differs from previous versions. DSHS notes that no change was made to how data is gathered or stored in the ImmTrac2 system, and another large-scale correction is unlikely to occur again.²

On November 3, 2021, new boundaries for commissioner precincts, adopted by the Harris County Commissioners Court, went into effect. This memo incorporates the new

commissioner precinct boundaries. As such, precinct-level analysis will differ from previous versions prior to the December 2021 memo.

Data Collected from Centers for Disease Control and Prevention (CDC)

The Analyst's Office collected information on social vulnerability from the Centers for Disease Control and Prevention (CDC). Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The Social Vulnerability Index (SVI) was created by the CDC and depicts the social vulnerability of communities, at the census tract level, within a given county.^v SVI groups fifteen census-derived factors into four themes that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability Index combines all the variables to provide a comprehensive assessment. SVI data aided with the development of **Table 2**.

Data Collected from Applied Technologies Location Analysis and Statistics (ATLAS)

The Analyst's Office collected commissioner precinct zip code data from Harris County's Applied Technologies Location Analysis and Statistics (ATLAS) System. As with data provided by Harris County Public Health, information collected from ATLAS reflects the commissioner precinct boundaries that went into effect on November 3, 2021.

Data Collected from Harris County Office of Management and Budget

The Analyst's Office collected commissioner precinct race and ethnicity data from the Harris County Office of Management and Budget (OMB). As with data provided by Harris County Public Health, data collected from OMB reflects the commissioner precinct boundaries that went into effect on November 3, 2021.

NOTE: All analyses in this memo, except **Figure 3**, reflect *individuals fully vaccinated*, rather than *individuals with at least one dose*.

Prior versions of this memo used population statistics for Harris County from the 2019 American Community Survey (ACS) 1-Year Estimates. All data in this memo uses population estimates from the 2020 Census, except **Table 3**, **Figure 4**, and **Figure 5**, which use 2019 ACS estimates.

^v Centers for Disease Control (CDC) Social Vulnerability Index, a tool to identify socially vulnerable communities.

BACKGROUND

The spread of the novel coronavirus, the cause of COVID-19, began in the United States in early 2020. Since then, local health entities have tracked the testing, the number of confirmed positive cases, and deaths related to COVID-19.

The distribution of vaccine for COVID-19 commenced in December 2020. The following is a timeline of the release of the COVID-19 vaccine and the changing eligibility for the vaccine in the United States and Texas.

Timeline for Vaccine Distribution

- In December 2020, two-dose vaccines from two producers, Moderna and Pfizer-BioNTech, were authorized for emergency use by the US Food and Drug Administration (FDA).
- In February 2021, the FDA authorized Johnson & Johnson's (J&J) one-dose vaccine for emergency use.
- From December 2020 to March 28, 2021, vaccines were made available for individuals in the Texas Department of State Health Services' (DSHS) Phase 1A (front-line healthcare workers and residents of long-term care facilities) and 1B (individuals ages 65+ and individuals ages 16+ with "at least one chronic medical condition that puts them at increased risk for severe illness from the virus that causes COVID-19").^{vi vii}
- On March 29, 2021, Texas expanded vaccine eligibility to all individuals ages 16 and older.
- Beginning May 12, 2021, Texas expanded vaccine eligibility to all individuals ages 12 and older.
- On August 23, 2021, the FDA granted full approval for the Pfizer-BioNTech vaccine for those 16 and older, with continued availability for those 12-15 years of age under emergency use authorization.
- On October 29, 2021, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine to include children five years through 11 years of age.³
- The FDA granted full approval of the Moderna vaccine to those 18 and older on January 31, 2022.⁴
- On June 17, 2022, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine for children six months through four years of age and the Moderna vaccine in children six months through 17 years of age.⁵
- On July 13, 2022, the FDA authorized the emergency use of the Novavax COVID-19 Vaccine, Adjuvanted for those 18 and older.⁶ On August 19, 2022, the FDA authorized the emergency use of the Novavax COVID-19 Vaccine, Adjuvanted for those 12-17 years of age.⁷

To incentivize unvaccinated residents to seek vaccination, Harris County and the City of Houston launched separate cash card incentive programs for individuals to receive their first vaccine dose in summer 2021. The Harris County program was launched on August 17, 2021, and offered \$100 cash cards to residents who received their first dose of the COVID-19 vaccine from August 17 to September 30, at any authorized provider in the County.⁸ Similarly, the City of Houston launched a cash card incentive

^{vi} Department of State Health Services (DSHS) COVID-19 Vaccine Allocation Phase 1 Definition.

^{vii} Department of State Health Services (DSHS) COVID-19 Vaccine Allocation Phase 1B Definition.

program on August 26, 2021, stating that the first 20,000 individuals to get fully vaccinated at an eligible health department site would receive \$150 in the form of cash cards; \$100 cash card for their first dose, and an additional \$50 cash card for their second dose.⁹ These two incentive programs concluded in September 2021.

Following the initial release of vaccine, waning immunity among early recipients prompted recommendation for boosters. The Centers for Disease Control and Prevention (CDC) considers an individual “fully vaccinated” against COVID-19 two weeks after the completion of a two-dose vaccine or one-dose vaccine.¹⁰ The CDC’s current definition for “fully vaccinated” excludes any additional shots (or “booster” shots) administered for COVID-19. The CDC considers individuals “up to date” if they have received all doses in the primary series and all boosters recommended, when eligible.^{viii 11}

Timeline for Boosters

- On August 12, 2021, the FDA amended the emergency use authorizations for the Moderna and Pfizer-BioNTech vaccines to allow for an additional third dose, a “booster,” to be administered to immunocompromised individuals.¹²
- On September 22, 2021, the FDA amended the emergency use authorization for the Pfizer-BioNTech COVID-19 Vaccine to allow for use of a single booster dose in certain populations.^{13 ix}
- On October 20, 2021, the FDA further expanded the emergency use authorization to permit single-dose booster shots of the Moderna and Johnson & Johnson COVID-19 vaccines.^{14 x}
- On November 19, 2021, the FDA amended the emergency use authorization of both the Moderna and Pfizer-BioNTech vaccines, allowing for a single dose booster to all individuals 18 years or older, after completion of primary vaccination with an FDA-authorized or approved COVID-19 vaccine.¹⁵
- On March 29, 2022, the FDA authorized a second booster dose of either the Pfizer-BioNTech or Moderna vaccine to be administered to those individuals 50 years or older and certain immunocompromised individuals.¹⁶
- On May 17, 2022, the FDA amended the emergency authorization use of the Pfizer-BioNTech vaccine, authorizing a single booster dose for individuals 5-11 years of age, at least five months after completing the primary series with the Pfizer-BioNTech vaccine.¹⁷
- On August 31, 2022, the FDA amended the emergency use authorization of the Moderna and Pfizer-BioNTech vaccines, authorizing bivalent formulations of the vaccines for use as a single booster vaccination, referred to as “updated boosters,” at least two months following primary or booster vaccination.¹⁸ The Moderna COVID-19 Vaccine, Bivalent is authorized for individuals 18 years or older, while the Pfizer-BioNTech COVID-19 Vaccine, Bivalent is authorized for individuals 12 years or older.¹⁹

^{viii} Primary series is defined as receipt of two doses for the Pfizer-BioNTech, Moderna, and Novavax vaccine or one dose of the Johnson & Johnson’s Janssen vaccine.

^{ix} Pfizer-BioNTech boosters were authorized for individuals 65 years of age and older; individuals 18 through 64 years of age at high risk of severe COVID-19; and individuals 18 through 64 years of age whose frequent institutional or occupational exposure to SARS-CoV-2 puts them at high risk of serious complications of COVID-19 including severe COVID-19.

^x Moderna boosters are available for individuals 65 years of age and older; individuals 18 through 64 years of age at high risk of severe COVID-19; and individuals 18 through 64 years of age with frequent institutional or occupational exposure to SARS-CoV-2. Johnson & Johnson boosters are available for individuals 18 years of age and older.

- On October 12, 2022, the FDA amended the emergency use authorization of the Moderna COVID-19 Vaccine, Bivalent, allowing the vaccine to be administered to individuals 6 through 17 years of age. The FDA also amended the emergency use authorization of the Pfizer-BioNTech COVID-19 Vaccine, Bivalent to be administered to individuals 5 through 11 years of age.²⁰
- On October 19, 2022, the FDA issued an emergency use authorization for the Novavax COVID-19 Vaccine, Adjuvanted, which allows a first booster of the Novavax Vaccine to individuals 18 years and older for whom an FDA-authorized mRNA bivalent COVID-19 booster is not accessible or clinically appropriate, as well as to individuals 18 years and older who elect to receive the Novavax COVID-19 Vaccine, Adjuvanted.²¹

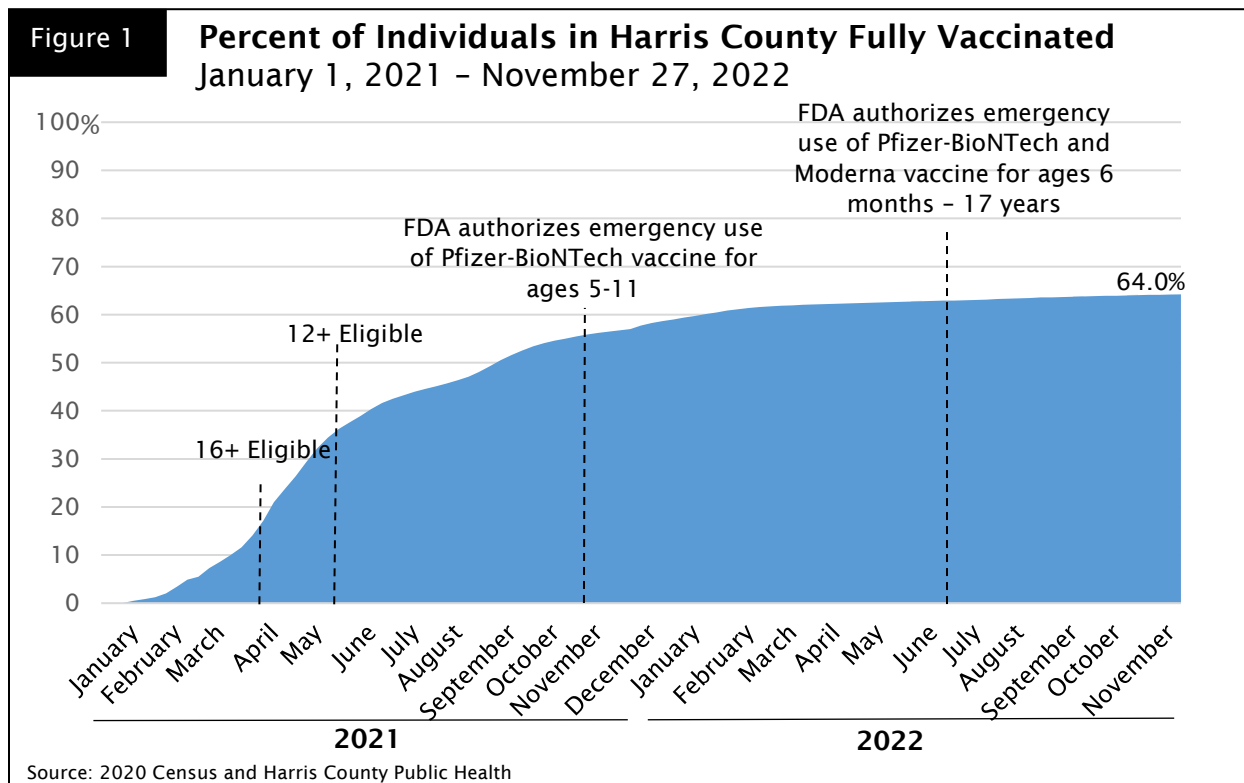
Table 1 summarizes COVID-19 vaccine approvals by the FDA since December 2020.

Table 1 US Food and Drug Administration (FDA) Vaccine Approvals December 2020 – November 29, 2022					
Manufacturer	Emergency Authorization Date/Approval Age	Full FDA Approval Granted	FDA Booster Authorization Date for All Adults (18+)	Booster Emergency Authorization Date/Approval Age	FDA 2nd Booster Dose Authorization Date
Pfizer-BioNTech	12/11/2020 (16+) 5/10/2021 (12-15) 10/29/2021 (5-11) 6/17/2022 (6 months-4 years)	8/23/2021 (For 16+ Only)	11/19/2021	5/17/2022 (5-11) 8/31/2022 (12+) Bivalent 10/12/2022 (5-11) Bivalent	3/29/2022 (For 50+ and immunocompromised)
Moderna	12/18/2020 (18+) 6/17/2022 (6 months-17 years)	1/31/2022 (18+)	11/19/2021 8/31/2022 Bivalent	10/12/2022 (6-17) Bivalent	3/29/2022 (For 50+ and immunocompromised)
Johnson & Johnson	2/27/2021(18+)	Not Currently Granted	10/20/2021	Not Currently Granted	Not Currently Granted
Novavax COVID-19 Vaccine, Adjuvanted	7/13/2022 (18+) 8/19/2022 (12-17)	Not Currently Granted	10/19/2022	Not Currently Granted	Not Currently Granted

Source: US Food and Drug Administration

INDIVIDUALS IN HARRIS COUNTY FULLY VACCINATED

Figure 1 presents the percentage of Harris County individuals fully vaccinated between January 1, 2021, and November 27, 2022.^{xi} This figure includes individuals vaccinated by Harris County Public Health (HCPH) and all other providers. HCPH reports countywide data regarding individuals fully vaccinated by week—the data presented below extends through the week of November 21 – November 27, 2022.



On March 29, 2021, as shown in **Figure 1**, Texas expanded vaccine eligibility to all individuals ages 16 and older. Beginning May 12, 2021, Texas expanded vaccine eligibility to all individuals ages 12 and older. On October 29, 2021, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine to include children 5 through 11 years of age.²²

As of November 27, 2022, 64.0% (3,028,468) of all individuals in Harris County were fully vaccinated, meaning an individual has received both doses of either the Moderna, Pfizer-BioNTech, or Novavax COVID-19 Vaccine, Adjuvanted vaccines or a single dose of the Johnson & Johnson vaccine.^{xii} This reflects a 1.5% increase (from 2,984,328 to 3,028,468) from August 30, 2022 (the prior memo). As of November 27, 2022, a total of 10.4% (494,120) of all individuals in Harris County were partially vaccinated—and 25.4% (1,203,830) of individuals received at least one booster shot, a 6.4% increase (from 1,131,887 to 1,203,830) from August 30, 2022 (the prior memo). In addition, as

^{xi} Individuals who are partially vaccinated and individuals fully vaccinated are mutually exclusive, meaning individuals partially vaccinated only includes individuals who have received one vaccine dose of a two-dose shot (Pfizer or Moderna), and individuals fully vaccinated include individuals who have received either the Johnson & Johnson vaccine or two vaccine doses of Pfizer or Moderna.

^{xii} Figure assumes Harris County's total population is 4,731,145, per the US Census Bureau's 2020 Decennial Census.

of November 27, 2022, 6.3% (296,323) of individuals in Harris County had received a bivalent booster shot.

NUMBER OF INDIVIDUALS PER 100,000 RESIDENTS FULLY VACCINATED BY ZIP CODE

Table 2 presents the number of individuals per 100,000 residents fully vaccinated by zip code. The table also includes the median income,^{xiii} Social Vulnerability Index (SVI) score, and commissioner precinct for each zip code. Commissioner precinct boundaries do not align with zip code boundaries; some zip codes are in multiple precincts.^{xiv} Precincts are listed in order of the greatest to least percentage of zip code land mass within the precinct.

Social vulnerability describes a community's ability to prevent human suffering and financial loss in the event of a disaster (such as a hurricane or disease outbreak).^{xv} SVI rankings are based on percentiles ranging from 0 to 1 (with higher values indicating greater vulnerability). SVI data is often presented using quartile classification. This analysis utilizes the CDC's SVI classifications as follows: 0-0.25 (lowest vulnerability); 0.25-0.5 (moderate low); 0.50-0.75 (moderate high); and 0.75-1 (highest vulnerability).

Table 2 ranks zip codes within Harris County to show relative vulnerability in comparison with the rest of Harris County. The median of the median incomes of the fifteen Harris County zip codes with the **fewest number of individuals per 100,000 residents fully vaccinated is \$56,927**. The median of the median incomes of the fifteen Harris County zip codes with the **greatest number of individuals per 100,000 residents fully vaccinated is \$98,727**.^{xvi}

This analysis excludes zip codes 77027, 77010, 77024, 77030, 77056, 77507, 77523, 77046, and 77498 because they report higher vaccinated populations than the reported zip code population. HCPH suggests that this is likely due to the low population relative to other zip codes, which means measured parameters are sensitive to bad data such as data entry errors, individuals using business addresses in lieu of a home residence, and other factors. Additionally, in October 2022, DSHS changed their geocoder parameters which associates zip codes with counties. This change resulted in the exclusion of zip codes previously included in this analysis—the new DSHS geocoder parameters assessed the landmass of previously included zip codes that overlap with Harris County to be too small to include going forward. This change impacted zip codes 77365, 77382, 77477, 77484, 77489, 77494, 77546, and 77581. For a full list of zip codes, see **Appendix D**.

^{xiii} The May 2022 memo includes median income data taken from the 2016-2020 ACS Five-Year Estimates. Median income data provided in previous iterations of this memo were taken from the 2015-2019 ACS Five-Year Estimates.

^{xiv} Zip codes are assigned to commissioner precincts in accordance with the November 3, 2021, commissioner precinct boundaries.

^{xv} Centers for Disease Control (CDC) SVI 2016 Documentation.

^{xvi} Analysis excludes zip codes with small percentage of land mass in Harris County and zip code 77507, which has no income data available.

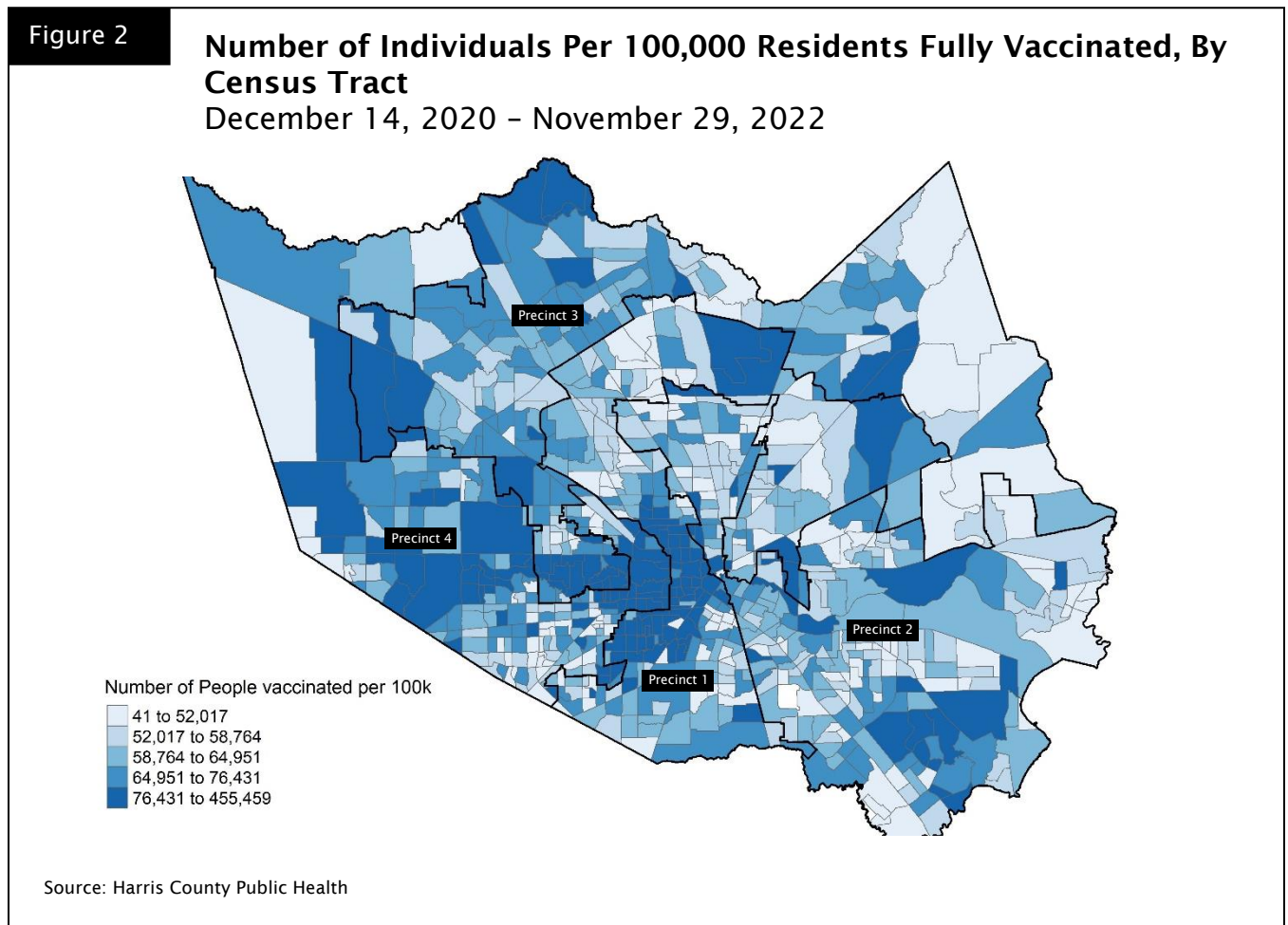
Table 2

Number of Individuals Per 100,000 Residents Fully Vaccinated by Zip Code, Median Income, SVI, and Commissioner Precinct
December 14, 2020 – November 29, 2022

Zip Codes With Fewest Number of Individuals Per 100,000 Residents Fully Vaccinated				
Zip Code	Number Per 100k	Median Income	SVI	Commissioner Precinct(s)
77336	40,031	\$60,802	0.30	3
77090	44,492	\$41,441	0.70	1,3
77532	45,794	\$78,489	0.37	3,2
77562	46,003	\$56,927	0.63	2,3
77004	48,794	\$55,498	0.53	1
77520	49,462	\$51,165	0.82	2
77530	50,953	\$63,155	0.59	2,3
77050	50,970	\$33,537	0.71	1,2
77067	51,022	\$44,196	0.79	1
77521	51,409	\$67,918	0.64	2,3
77503	52,047	\$57,584	0.82	2
77060	52,431	\$31,173	0.94	2,1
77571	52,685	\$77,709	0.38	2
77013	53,014	\$36,647	0.98	2,1
77536	54,087	\$77,163	0.44	2
Zip Codes With Greatest Number of Individuals Per 100,000 Residents Fully Vaccinated				
Zip Code	Number Per 100k	Median Income	SVI	Commissioner Precinct(s)
77009	73,208	\$61,296	0.62	2,1
77094	73,400	\$164,564	NA	4
77018	74,466	\$92,153	0.48	1
77006	77,978	\$79,808	0.09	1
77025	78,364	\$72,207	0.32	1
77083	79,437	\$54,360	0.53	4
77002	80,197	\$80,220	0.42	1,2
77008	82,016	\$121,408	0.08	1,4
77059	84,372	\$139,371	0.05	2
77007	84,820	\$129,703	0.01	4,1
77005	85,630	\$202,526	0.03	1
77032	88,962	\$33,630	0.99	1,2
77401	94,158	\$184,332	0.03	1
77019	97,856	\$116,032	0.09	4,1
77098	98,762	\$98,727	0.07	4,1
<div> <div>Highest Vulnerability</div> <div>Moderate High Vulnerability</div> <div>Lowest Vulnerability</div> <div>Moderate Low Vulnerability</div> </div>				
Source: Population estimates from 2020 Census; income data from American Community Survey (ACS) 2020 5-Year Estimates downloaded from Harris County's Applied Technologies Location Analysis and Statistics (ATLAS); and SVI and vaccination rates from Harris County Public Health				

NUMBER OF INDIVIDUALS PER 100,000 RESIDENTS FULLY VACCINATED BY CENSUS TRACT

Figure 2 presents the number of individuals per 100,000 Harris County residents fully vaccinated by census tract with Harris County commissioner precinct boundaries.^{xvii}



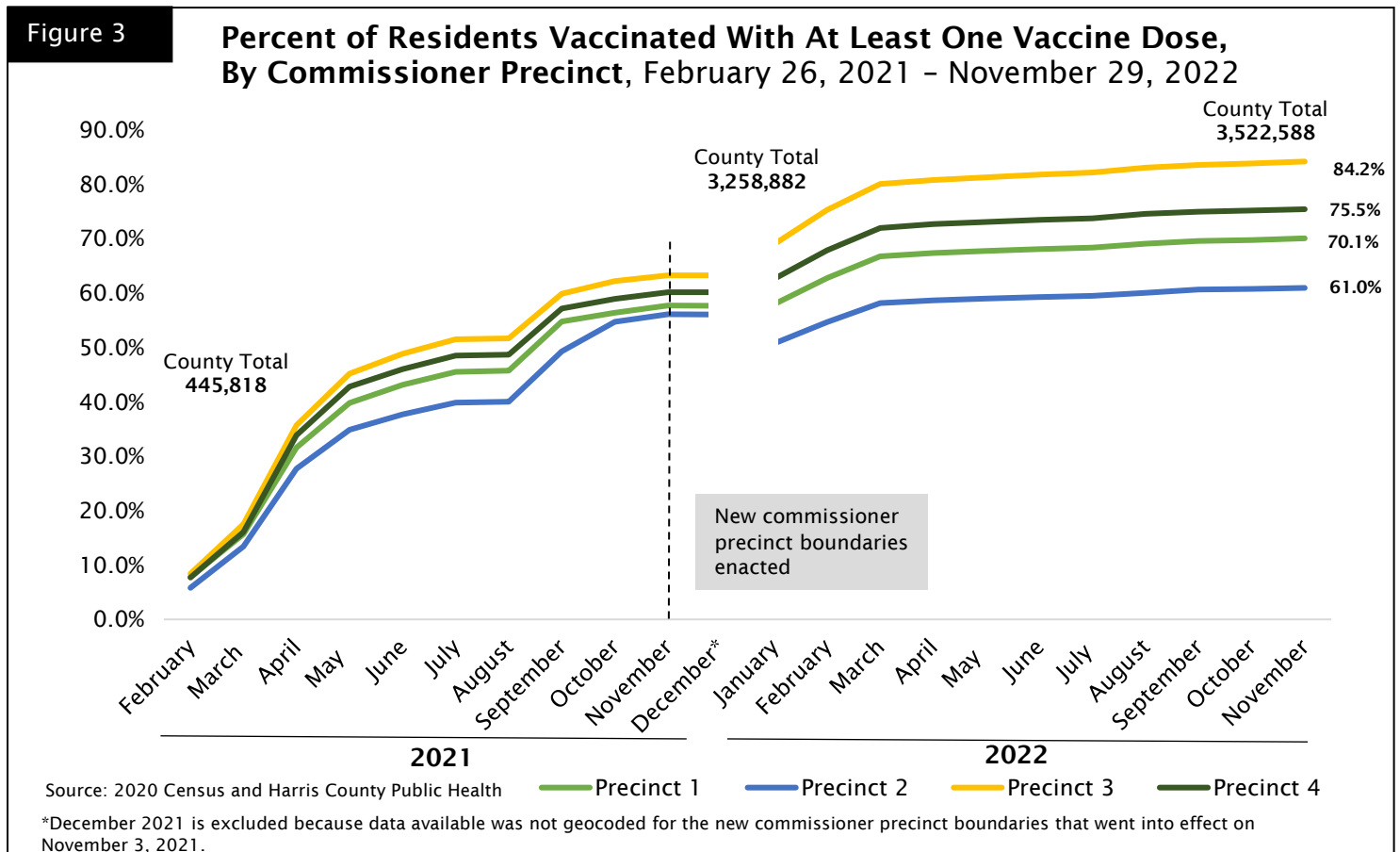
As of November 29, 2022, **64.0% (3,028,468)** of Harris County residents were fully vaccinated.^{xviii}

^{xvii} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xviii} Figure assumes Harris County population of 4,731,145 according to the 2020 Census.

PERCENT OF RESIDENTS VACCINATED WITH AT LEAST ONE DOSE BY COMMISSIONER PRECINCT

Figure 3 demonstrates the growth in the percent of residents vaccinated *with at least one dose* by commissioner precinct from February 26, 2021, through November 29, 2022, for all four Harris County commissioner precincts.^{xix}



Between February 26, 2021, and November 29, 2022, 74.5% (3,522,588) of individuals in Harris County were vaccinated with at least one vaccine dose.^{xx} There was an increase of 1.4% (from 3,474,382 to 3,522,588) between August 30, 2022 (the prior memo) and November 29, 2022, of individuals vaccinated with at least one dose. As of November 29, 2022:^{xxi}

- **70.1% (829,582) of Precinct One residents** were vaccinated with at least one vaccine dose;
- **61.0% (721,321) of Precinct Two residents** were vaccinated with at least one vaccine dose;
- **84.2% (990,808) of Precinct Three residents** were vaccinated with at least one vaccine dose; and,
- **75.5% (896,913) of Precinct Four residents** were vaccinated with at least one vaccine dose.

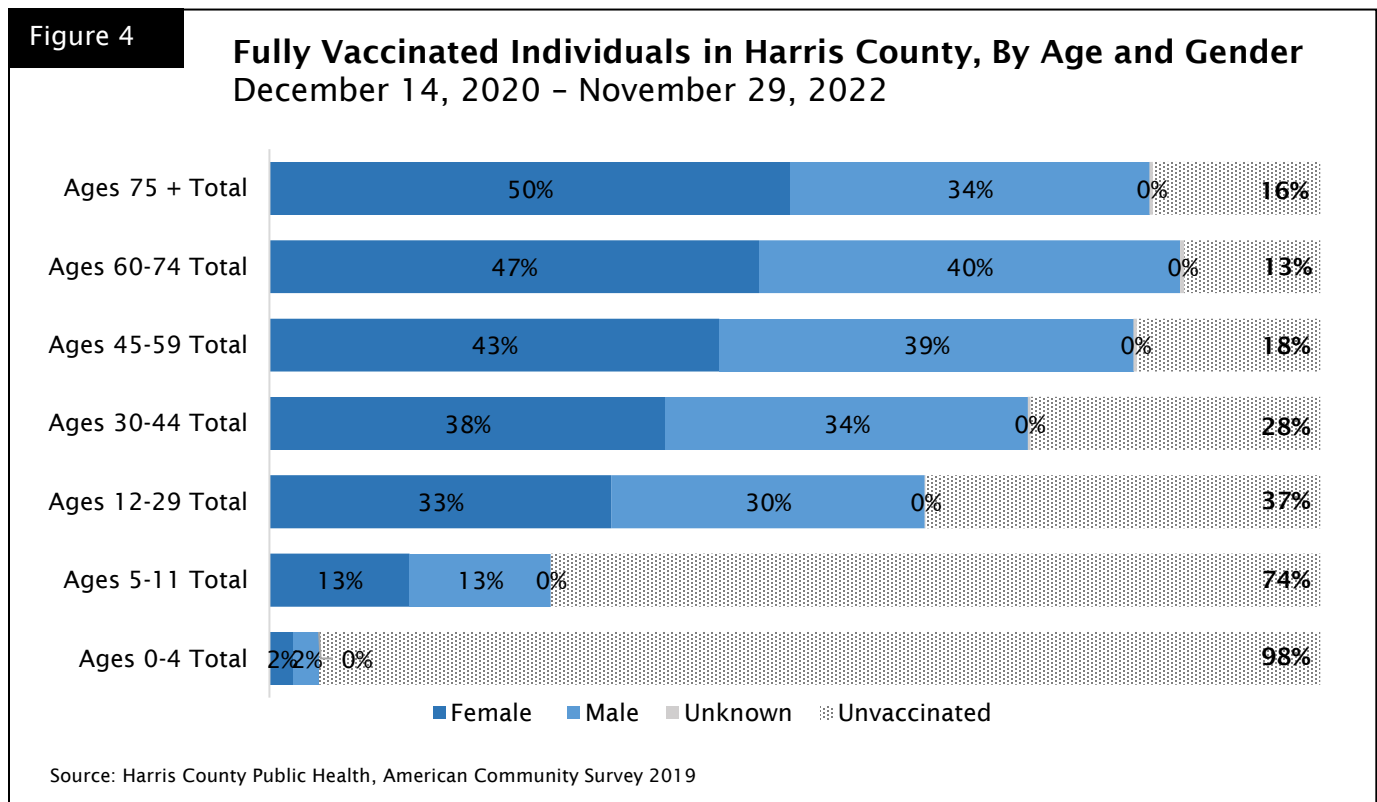
^{xix} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xx} Figure assumes Harris County's total population of 4,731,145, per the 2020 Census.

^{xxi} Precinct totals do not sum to County total because 83,964 individuals have addresses that cannot be geo-coded into a Precinct.

FULLY VACCINATED INDIVIDUALS BY AGE AND GENDER

Figure 4, and **Table 3**, which follows, reflect all individuals fully vaccinated by all providers in Harris County by the individual's age and gender. Each bar for each age group represents the age group's total population within Harris County's population and reflects the percentage of individuals in each age group vaccinated by gender.



Of the individuals who are fully vaccinated by a Harris County provider, 53% (1,589,984) are female; 47% (1,428,944) are male; and under 1% (9,533) are recorded as unknown gender.^{xxii} As shown in **Figure 4**, individuals ages 60-74 have the smallest percent of their age group who remain unvaccinated (13%), while individuals ages 0-4 have the largest percent of their age group who remain unvaccinated (98%).

^{xxii} Age and gender totals do not sum to the total number of fully vaccinated individuals due to some records having incomplete or incorrect data.

FULLY VACCINATED INDIVIDUALS BY AGE GROUP

Table 3 reflects all individuals fully vaccinated by all providers in Harris County by the individual's age group and includes the percentage of Harris County's total age group population vaccinated.^{xxiii} For context, **Table 3** also includes the percentage of Harris County's total population by age group.

Table 3 Fully Vaccinated Individuals in Harris County by Age Group December 14, 2020 – November 29, 2022			
Age Group	Number of Individuals Vaccinated	Percentage of Age Group Vaccinated ^{xxiv}	Percentage of Eligible County Population ^{xxv}
75+	161,595	84.1%	4.1%
60-74	497,334	87.1%	12.1%
45-59	694,374	82.5%	17.8%
30-44	759,814	72.4%	22.3%
12-29	771,265	62.5%	26.2%
5-11	127,663	26.8%	10.1%
0-4	16,416	4.7%	7.4%

Source: Harris County Public Health, American Community Survey 2019 1-Year Estimates

As shown in **Table 3**:

- 84.1% (161,595) of individuals ages 75 and over are fully vaccinated;
- 87.1% (497,334) of individuals ages 60-74 are fully vaccinated;
- 82.5% (694,374) of individuals ages 45-59 are fully vaccinated;
- 72.4% (759,814) of individuals ages 30-44 are fully vaccinated;
- 62.5% (771,265) of individuals ages 12-29 are fully vaccinated;
- 26.8% (127,663) of individuals ages 5-11 are fully vaccinated; and,
- 4.7% (16,416) of individuals ages 0-4 are fully vaccinated.

^{xxiii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

^{xxiv} Reflects the number of individuals in the age group who are fully vaccinated. Previous versions of this memo reflected the total age group fully vaccinated as a percentage of all individuals vaccinated.

^{xxv} Age group populations from American Community Survey 2019 data. Age groups 5-11 and 12-29 are estimated by the Analyst's Office due to data limitations.

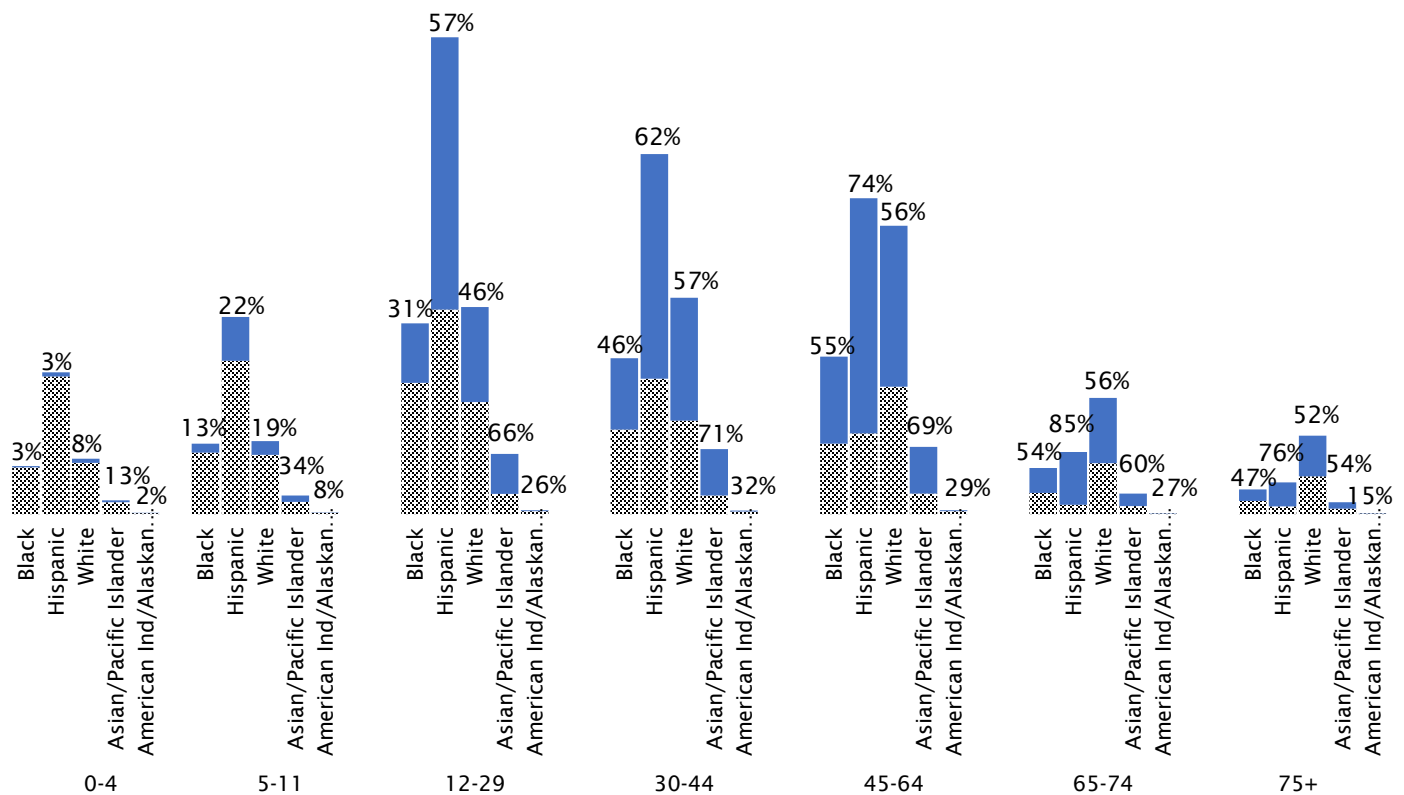
FULLY VACCINATED INDIVIDUALS BY RACE/ETHNICITY AND AGE GROUP

Figure 5 reflects all individuals fully vaccinated by all providers in Harris County by the individual's race and age group.^{xxvi} ^{xxvii} Each bar represents the percentage of individuals vaccinated for the given age range by race/ethnicity. The height of the bars reflects the given race/ethnicity group's proportion of the total population for the given age group.

Figure 5

Fully Vaccinated Individuals in Harris County, By Race/Ethnicity and Age Group

December 14, 2020 – November 29, 2022



Source: American Community Survey 2019 1-Year Estimates and Harris County Public Health

■ Vaccinated ■ Unvaccinated

^{xxvi} Note: Percentages for race and ethnicity data for "Other," "Unknown," and "Multi-Racial" population groups are not included as data for those groups are not captured in the same manner by the ACS Survey when compared to data provided by DSHS.

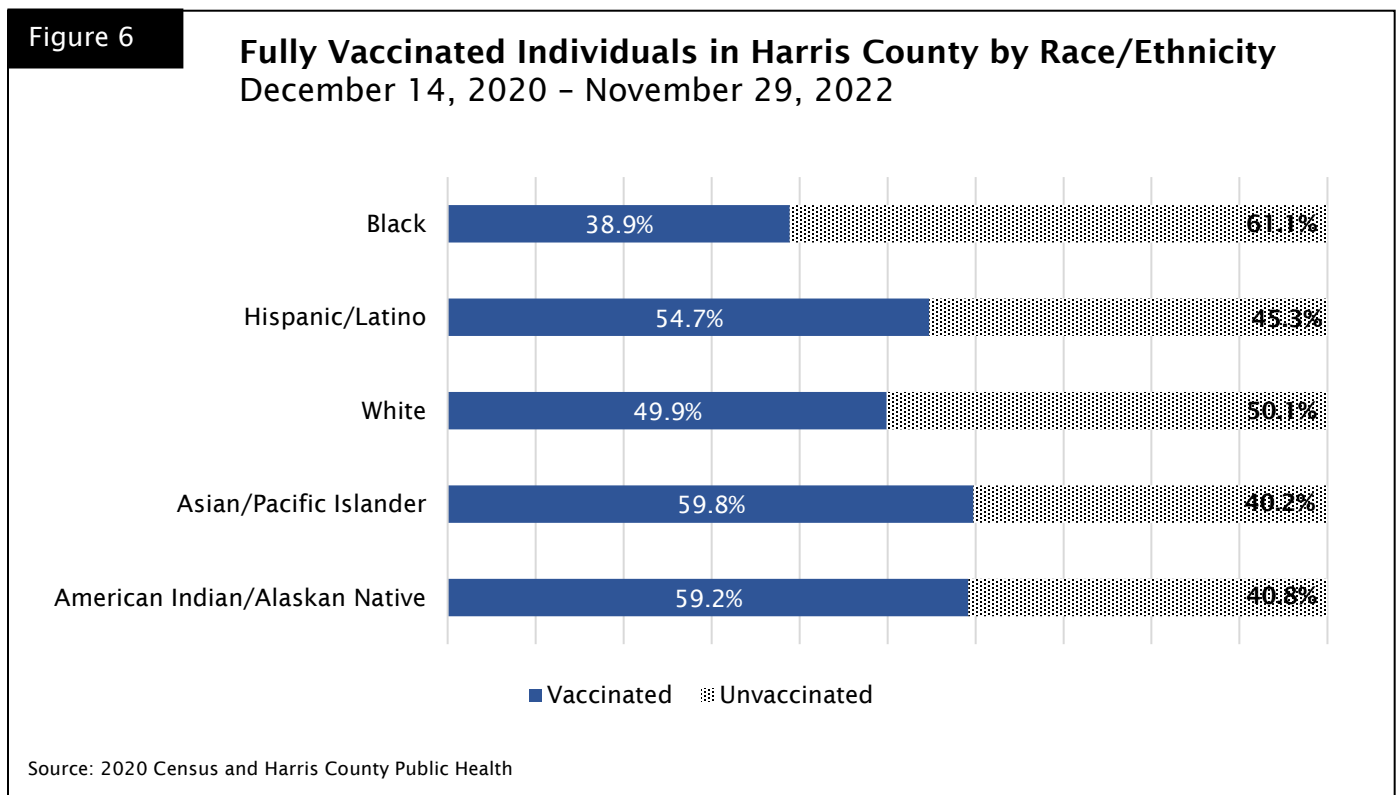
^{xxvii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

As shown in **Figure 5**, for individuals fully vaccinated in Harris County, the demographic with the highest percentage of individuals vaccinated are individuals who identify as Hispanic ages 65-74 (85%). The demographic with the lowest percentage of individuals vaccinated are individuals who identify as American Indian/Alaskan Native ages 0-4 (2%).

PERCENTAGE OF FULLY VACCINATED INDIVIDUALS BY RACE AND ETHNICITY

Figure 6, and **Table 4**, which follows, reflect the percentage of individuals in Harris County who are fully vaccinated by all providers in Harris County by race and ethnicity.^{xxviii xxix xxx}

Each bar for each race or ethnicity group represents the race or ethnicity group's total population within Harris County's population and reflects the percentage of individuals in each race and ethnicity group vaccinated.



As shown in **Figure 6**, individuals who identify as Black in Harris County have the smallest vaccinated population at 38.9%, followed by individuals who identify as White at 49.9%.

^{xxviii} Note: Prior to February 4, 2021, providers were not required to report race and ethnicity when reporting doses to the Texas Department of State Health Services (DSHS) because vaccine recipients are allowed to decline disclosing their race and ethnicity to a provider.

^{xxix} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo. As a result, the number of individuals retroactively identified as "multi-racial" continues to increase as DSHS continues to update their patient profiles.

^{xxx} The number of vaccinated individuals identifying as Other/Unknown and Multi-racial reported by DSHS for Harris County exceed the population totals for the two groups reported in the 2020 Census, resulting in percentages vaccinated that exceed 100%. Because of this anomaly, these two groups have been excluded from the analysis.

FULLY VACCINATED INDIVIDUALS BY RACE AND ETHNICITY

Table 4 reflects the race and ethnicity of individuals in Harris County who are fully vaccinated by all providers in Harris County.^{xxxxi xxxii} For context, **Table 4** also includes the percentage of Harris County's total population by race and ethnicity.

Previous versions of this table in past memos reflected the total number of individuals by race and ethnicity fully vaccinated as a percentage of all individuals vaccinated—this version of the table shows the percentage vaccinated within a given race or ethnicity.

Table 4 Fully Vaccinated Individuals in Harris County by Race/Ethnicity December 14, 2020 – November 29, 2022			
Race/Ethnicity	Number of Individuals Vaccinated	Percentage of Race/Ethnicity Group Vaccinated ^{xxxiii}	Percentage of Total Population
Black	344,350	38.9%	18.7%
Hispanic/Latino	1,113,642	54.7%	43.0%
White	653,522	49.9%	27.7%
Asian American/ Pacific Islander	207,961	59.8%	7.4%
American Indian/ Alaskan Native	4,991	59.2%	0.2%
Multi-Racial	472,635	NA	2.6%
Other/Unknown	231,367	NA	0.5%

Source: 2020 Census and Harris County Public Health

As shown in **Table 4**:

- 38.9% (344,350) of individuals who identify as Black are fully vaccinated;
- 54.7% (1,113,642) of individuals who identify as Hispanic/Latino are fully vaccinated;
- 49.9% (653,522) of individuals who identify as White are fully vaccinated;
- 59.8% (207,961) of individuals who identify as Asian American/Pacific Islander are fully vaccinated; and,
- 59.2% (4,991) of individuals who identify as American Indian/Alaskan Native are fully vaccinated.

^{xxxxi} Note: Prior to February 4, 2021, providers were not required to report race/ethnicity when reporting doses to Texas Department of State Health Services (DSHS) because vaccine recipients are allowed to decline disclosing their race/ethnicity to a provider.

^{xxxii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

^{xxxiii} Note: The percentage of Harris County's total race and ethnicity group population that is vaccinated for Other/Unknown and Multi-racial is unavailable because there are more vaccinated individuals identifying as Multi-racial and Other/Unknown than the total population estimate of both groups in Harris County's 2020 Census data.

INDIVIDUALS FULLY VACCINATED BY RACE AND ETHNICITY AND COMMISSIONER PRECINCT

Table 5 reflects the race and ethnicity of individuals in Harris County who are fully vaccinated by providers in Harris County by commissioner precinct.^{xxxiv xxxv} For context, **Table 5** also includes the percentage of each commissioner precinct's total population by race and ethnicity.

Table 5 Fully Vaccinated Individuals in Harris County by Race/Ethnicity, By Commissioner Precinct December 14, 2020 - November 29, 2022			
Race/Ethnicity	Number of Individuals Vaccinated	Percentage of Precinct's Vaccinated Population	Percentage of Total Precinct Population
Precinct 1			
Black	148,703	21.0%	33.4%
Hispanic/Latino	259,943	36.6%	37.3%
White	101,247	14.3%	19.8%
Asian Am./Pacific Islander	40,157	5.7%	6.4%
Am. Indian/Alaskan Native	1,092	0.2%	0.1%
Multi-racial	108,164	15.2%	2.4%
Other/Unknown	50,488	7.1%	0.5%
Precinct 2			
Black	36,041	5.8%	10.2%
Hispanic/Latino	321,912	51.9%	63.6%
White	126,088	20.3%	20.3%
Asian Am./Pacific Islander	21,981	3.5%	3.6%
Am. Indian/Alaskan Native	809	0.1%	0.2%
Multi-racial	71,024	11.4%	1.7%
Other/Unknown	42,916	6.9%	0.4%
Precinct 3			
Black	77,888	9.1%	13.8%
Hispanic/Latino	268,409	31.5%	28.6%
White	204,892	24.0%	45.0%
Asian Am./Pacific Islander	84,576	9.9%	8.4%
Am. Indian/Alaskan Native	1,621	0.2%	0.2%
Multi-racial	154,101	18.1%	3.6%
Other/Unknown	60,586	7.1%	0.5%
Precinct 4			
Black	74,984	9.6%	17.4%
Hispanic/Latino	248,831	32.0%	42.4%
White	209,730	27.0%	25.7%
Asian Am./Pacific Islander	55,261	7.1%	11.0%
Am. Indian/Alaskan Native	1,370	0.2%	0.2%
Multi-racial	131,358	16.9%	2.6%
Other/Unknown	56,031	7.2%	0.7%

Sources: 2020 Census, Harris County Public Health, and Harris County Office of Management and Budget

^{xxxiv} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xxxv} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

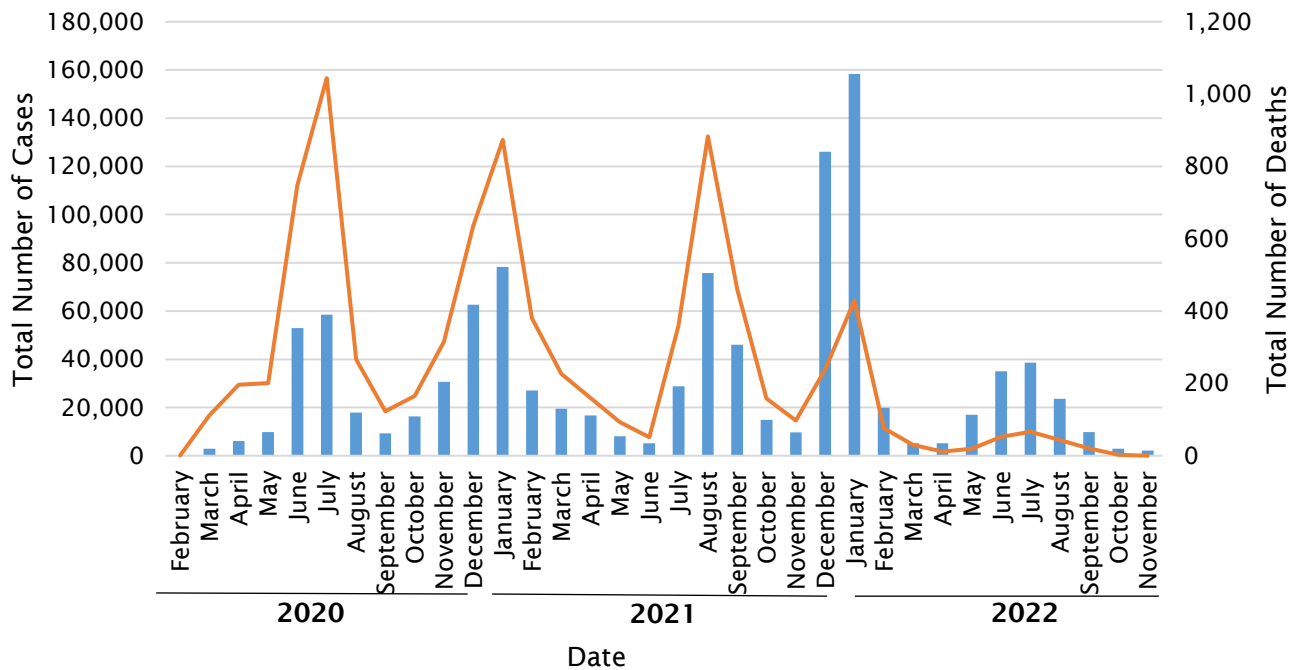
COVID-19 CASES AND DEATHS IN HARRIS COUNTY

Figure 7 represents both COVID-19 cases and COVID-19-related deaths in Harris County from February 1, 2020, through November 30, 2022.

Figure 7 captures the COVID-19 surges in Harris County in summer 2020, winter 2020-2021, summer 2021, and winter 2021-2022, with the highest number of unique cases in January 2022 at 158,286.

Figure 7

COVID-19 Cases and Deaths in Harris County February 1, 2020 - November 30, 2022



Source: Harris County Public Health

■ Total Cases by Month — Total Deaths by Month

Note: COVID-19 Cases and death figures are provided monthly and are continually revised retroactively as new information is made available.

COVID-19 VARIANTS IN HARRIS COUNTY BASED ON TESTING

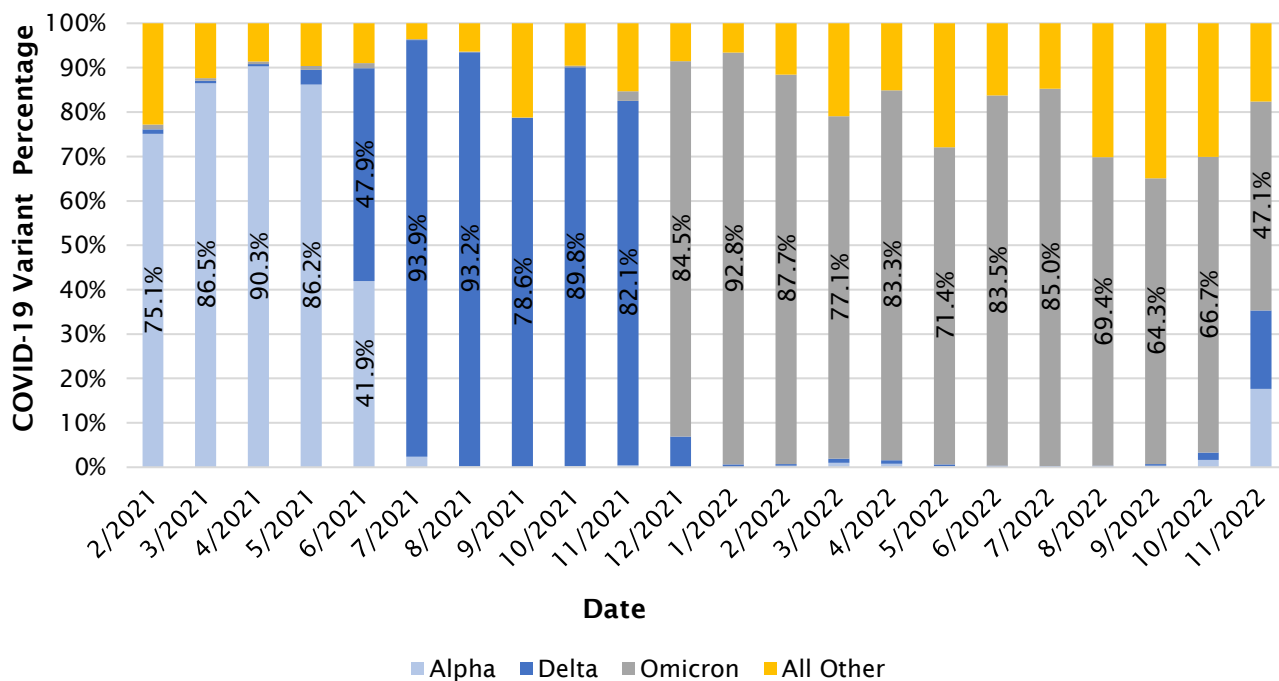
Figure 8 represents the prevalence of different variants of the COVID-19 virus in Harris County from February 1, 2021, through July 31, 2022.^{xxxvi} According to Harris County Public Health (HCPH), data regarding COVID-19 variants prior to February 2021 is unavailable. As data regarding COVID-19 variants is not shared between the health entities that have jurisdiction over various parts of Harris County, **Figure 8** only presents data collected from the parts of Harris County within the HCPH jurisdiction.

Figure 8 captures the initial surge of the Alpha variant beginning in early 2021, which was followed and replaced by the surge in the Delta variant during the summer of 2021, and then the Omicron variant during the winter of 2021-2022.

Of note, testing for COVID-19 variants is voluntary for test providers. In addition, sampling methodology and variant sequencing protocols differ between test providers, leading to an overall small sample size. HCPH states that due to the sufficiently small sample size, the data presented can only be used to deduce overall trends regarding the prevalence of COVID-19 variants.

Figure 8

COVID-19 Variants in Harris County February 1, 2020 – November 30, 2022



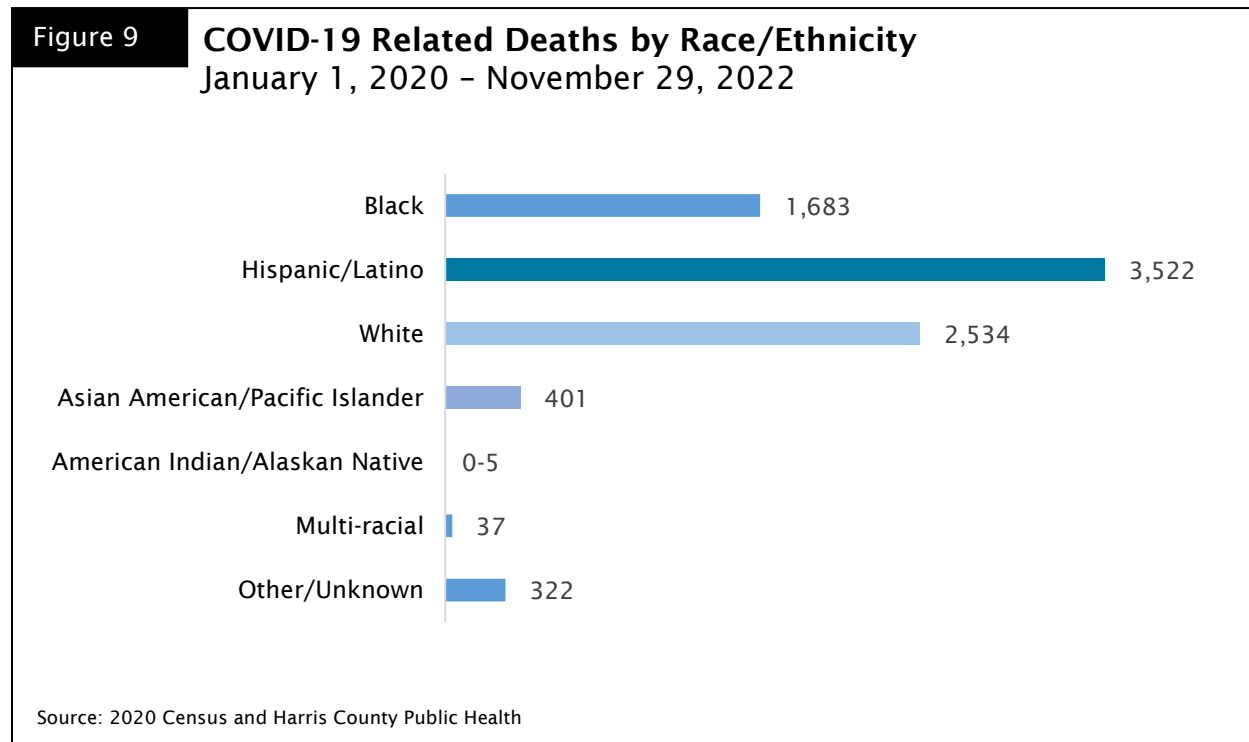
Source: Harris County Public Health

Note: COVID-19 Variant data is provided monthly and is continually revised retroactively as new information is made available.

^{xxxvi} Note: Due to privacy regulations, case counts below five are reported as 0-5. For the purposes of the visual analyses, case counts reported as 0-5 are calculated as three.

COVID-19 RELATED DEATHS BY RACE AND ETHNICITY

Figure 9 reflects the total number of confirmed COVID-19-related deaths in Harris County by race and ethnicity.^{xxxvii}



Of the 8,535 individuals in Harris County who died of a COVID-19-related death between January 1, 2020, and November 29, 2022:^{xxxviii}

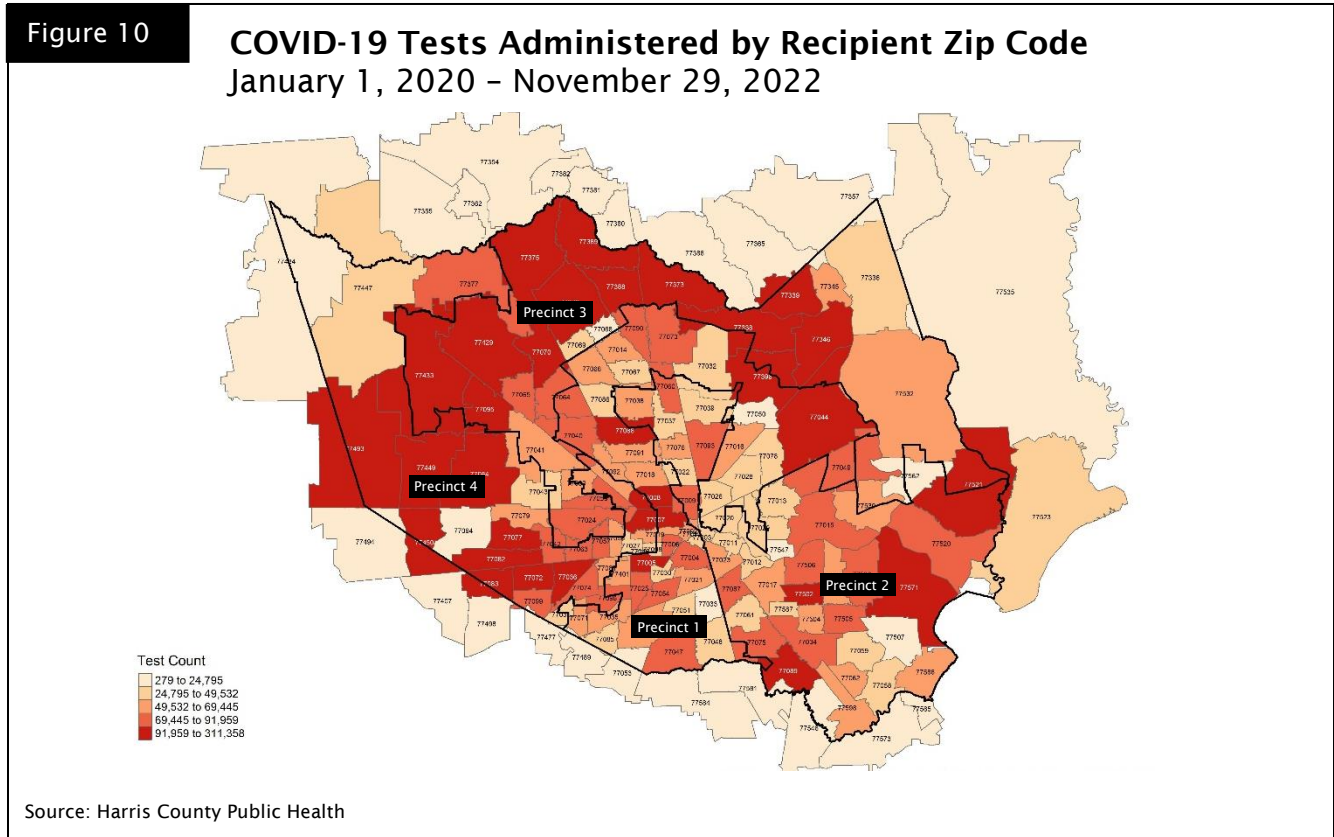
- **19.7% (1,683) identified as Black**, and for context, 18.7% of County residents identify as Black;
- **41.3% (3,522) identified as Hispanic/Latino**, and for context, 43.0% of County residents identify as Hispanic;
- **29.7% (2,534) identified as White**, and for context, 27.7% of County residents identify as White;
- **4.7% (401) identified as Asian or Pacific Islander**, and for context, 7.4% of County residents identify as Asian, Pacific Islander, or Native Hawaiian;
- **0.1% (0-5) identified as American Indian or Alaskan Native**, and for context, 0.2% of County residents identify as American Indian or Alaskan Native;
- **0.4% (37) identified as Multi-racial**, and for context, 2.6% of County residents identify as Two or More Races; and,
- **3.8% (322) were recorded as Other/Unknown race and ethnicity.**

^{xxxvii} Race and ethnicity totals do not sum to Total Precinct Deaths because 33 deaths do not have race and ethnicity data available.

^{xxxviii} County-level race and ethnicity data are derived from the 2020 Census population estimates.

COVID-19 TESTS BY ZIP CODE

Figure 10 reflects the total number of COVID-19 polymerase chain reaction (PCR) tests administered to Harris County residents by all providers in Harris County by zip code, and **Table 6** reflects the number of COVID-19 PCR tests administered by the commissioner precinct.^{xxxix xl}



Between January 1, 2020, and November 29, 2022, providers in Harris County **administered 10,952,821 COVID-19 tests**. For a full list of tests administered by recipient zip code, see **Appendix A**.^{xli}

Table 6

COVID-19 Tests Administered, by Commissioner Precinct and for Harris County, January 1, 2020 – November 29, 2022				
Precinct 1	Precinct 2	Precinct 3	Precinct 4	Total Tests
2,420,277	2,386,079	2,573,113	2,318,629	10,952,821

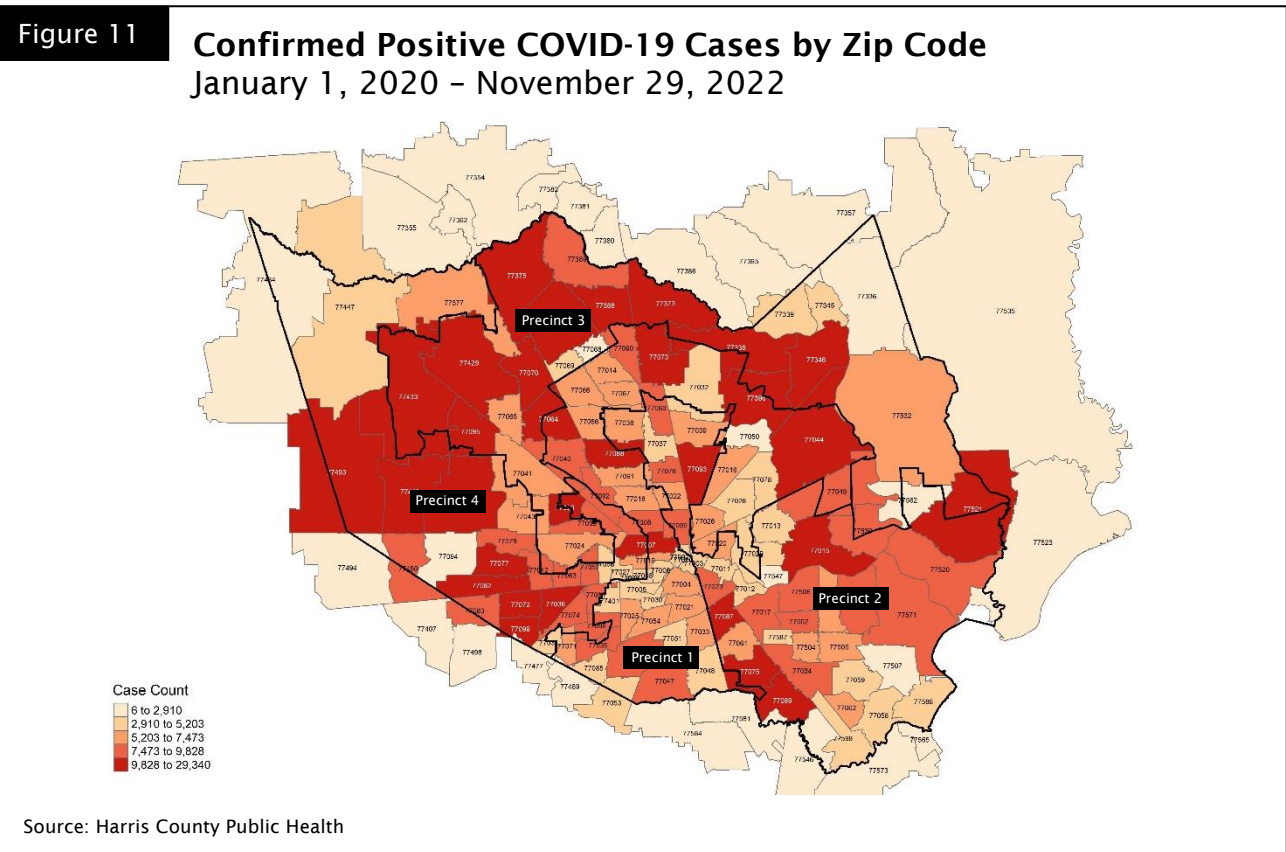
^{xxxix} PCR refers to the polymerase chain reaction tests commonly used to test for COVID-19.

^{xl} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xli} Precinct totals do not sum to Total Tests because 1,254,723 tests administered have addresses that cannot be geo-coded into a Precinct.

CONFIRMED POSITIVE COVID-19 CASES BY ZIP CODE

Figure 11 reflects the total number of COVID-19 positive cases confirmed by a PCR test in Harris County, reported by zip code, and **Table 7** reflects the number of positive COVID-19 cases by commissioner precinct.^{xlvi}



Between January 1, 2020, and November 29, 2022, there were **977,941 confirmed positive cases of COVID-19** in Harris County. For a full list of positive cases by zip code, see **Appendix B**.^{xlv}

Table 7

Confirmed Positive Cases by Commissioner Precinct and for Harris County, January 1, 2020 – November 29, 2022									
Precinct 1		Precinct 2		Precinct 3		Precinct 4		County	
Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of County Population
256,600	21.7%	263,221	22.3%	210,101	17.9%	241,243	20.3%	977,941	20.7%

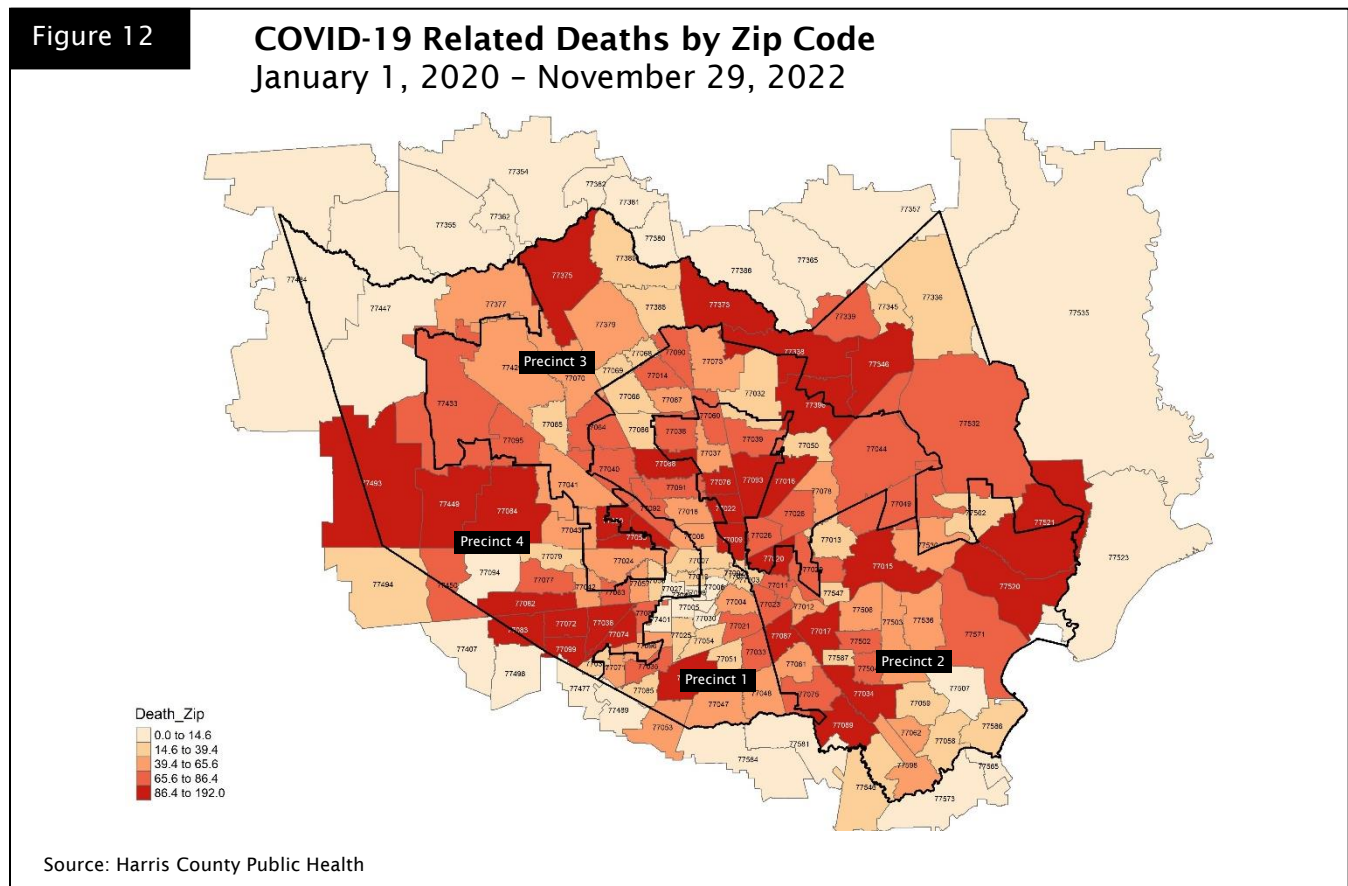
^{xlvi} PCR refers to the polymerase chain reaction tests commonly used to test for COVID-19.

^{xlvii} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xlviii} Precinct totals do not sum to Total Positive Cases because 6,766 confirmed positive cases have addresses that cannot be geo-coded into a Precinct.

CONFIRMED COVID-19 RELATED DEATHS BY ZIP CODE

Figure 12 reflects the total number of confirmed COVID-19-related deaths in Harris County by zip code, and **Table 8** reflects the number of COVID-19-related deaths by commissioner precinct.^{xliv}



Between January 1, 2020, and November 29, 2022, there were **8,535 confirmed COVID-19-related deaths** in Harris County. For a full list of deaths by zip code, see **Appendix C**.^{xlvi}

Table 8

COVID-19 Related Deaths by Commissioner Precinct and for Harris County, January 1, 2020 – November 29, 2022									
Precinct 1		Precinct 2		Precinct 3		Precinct 4		County Total	
Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of County Population
2,186	0.18%	2,769	0.23%	1,170	0.10%	2,327	0.20%	8,535	0.18%

^{xliv} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xlvi} Precinct totals do not sum to Total Deaths because 83 deaths have addresses that cannot be geo-coded into a precinct.

APPENDIX A

Total COVID-19 Tests Administered by Zip Code Ordered by Tests Administered, January 1, 2020 – November 29, 2022							
Zip Code	Tests Administered	Zip Code	Tests Administered	Zip Code	Tests Administered	Zip Code	Tests Administered
77565	279	77028	32,896	77019	63,534	77064	90,006
77362	323	77085	33,731	77041	64,277	77536	90,893
77381	365	77069	34,160	77503	65,125	77015	91,732
77382	378	77032	34,763	77532	66,602	77339	92,299
77380	602	77058	35,065	77598	66,893	77008	93,474
77354	899	77051	35,614	77045	67,142	77571	93,915
77355	1,239	77011	36,698	77504	67,373	77088	95,947
77477	1,534	77587	38,609	77530	67,630	77072	96,268
77535	1,560	77059	40,329	77079	68,010	77502	96,417
77386	1,617	77098	40,422	77080	68,305	77389	98,419
77489	1,914	77026	41,469	77002	68,844	77044	98,998
77357	1,978	77027	43,041	77035	69,294	77070	99,991
77507	2,015	77048	44,133	77025	69,483	77036	107,839
77498	2,029	77447	44,312	77065	69,527	77007	108,728
77581	2,137	77061	45,108	77047	69,690	77388	108,798
77010	2,370	77067	45,349	77034	70,504	77082	111,246
77365	2,976	77086	45,399	77006	70,814	77338	118,864
77573	3,399	77043	45,578	77060	70,917	77089	119,934
77584	3,535	77020	45,733	77087	71,181	77077	128,172
77053	3,603	77039	47,823	77505	71,502	77521	132,283
77046	4,317	77022	48,797	77520	73,253	77373	136,004
77407	5,165	77030	49,349	77049	73,670	77083	136,787
77494	5,433	77062	50,265	77074	73,952	77375	152,857
77546	7,166	77076	51,357	77093	75,520	77450	153,383
77050	7,737	77038	52,656	77096	75,714	77396	163,209
77033	18,668	77014	53,707	77057	76,265	77346	167,570
77562	18,833	77345	54,614	77073	76,394	77095	174,925
77094	19,070	77071	55,244	77042	76,648	77005	175,602
77547	20,197	77091	56,003	77090	76,841	77379	183,509
77068	20,807	77023	56,017	77040	78,769	77084	197,669
77484	23,768	77021	56,081	77004	79,974	77429	206,934
77336	25,480	77586	57,086	77075	80,213	77433	251,485
77031	25,594	77066	57,398	77506	81,110	77449	311,358
77013	26,887	77092	57,853	77063	83,796		
77078	27,195	77016	58,234	77377	84,888		
77037	28,605	77401	58,551	77054	84,975		
77003	30,039	77056	58,952	77099	85,252		
77523	31,902	77018	59,823	77009	87,642		
77012	32,122	77081	63,096	77024	88,204		
77029	32,484	77017	63,303	77055	88,485		

APPENDIX B

Total COVID-19 Confirmed Positive Cases by Zip Code Ordered by Positive Cases, January 1, 2020 – November 29, 2022							
Zip Code	Positive Cases	Zip Code	Positive Cases	Zip Code	Positive Cases	Zip Code	Positive Cases
77565	6	77058	3,648	77039	6,339	77060	9,420
77382	7	77013	3,654	77020	6,581	77040	9,468
77362	8	77078	3,737	77004	6,633	77055	9,534
77355	9	77069	3,795	77532	6,667	77009	9,645
77381	13	77027	3,904	77066	6,742	77034	9,777
77354	16	77587	3,986	77033	6,787	77502	9,781
77535	18	77051	4,229	77091	6,893	77080	9,899
77573	34	77032	4,254	77038	7,054	77064	9,932
77357	40	77029	4,508	77377	7,091	77087	9,959
77380	45	77037	4,526	77022	7,187	77073	10,189
77386	64	77586	4,534	77024	7,223	77388	10,333
77498	96	77028	4,553	77065	7,258	77338	10,452
77010	126	77002	4,563	77041	7,391	77007	10,604
77365	140	77053	4,692	77016	7,431	77075	11,105
77507	142	77056	4,692	77096	7,484	77082	11,295
77407	159	77339	4,948	77079	7,575	77070	11,342
77584	176	77005	5,022	77530	7,673	77099	11,421
77581	239	77085	5,036	77023	7,690	77093	11,663
77523	266	77006	5,060	77035	7,916	77072	12,036
77046	399	77598	5,070	77536	7,951	77015	12,486
77484	554	77048	5,165	77047	7,952	77521	12,523
77477	653	77012	5,170	77092	7,981	77077	12,533
77050	917	77011	5,176	77506	7,994	77088	12,586
77094	1,644	77019	5,310	77057	8,040	77044	13,024
77494	1,854	77504	5,411	77520	8,232	77375	13,229
77562	1,928	77061	5,438	77076	8,258	77373	13,879
77489	2,080	77505	5,495	77571	8,266	77036	13,890
77336	2,177	77062	5,506	77049	8,357	77396	14,322
77068	2,314	77054	5,547	77063	8,438	77089	14,390
77547	2,352	77026	5,584	77008	8,527	77095	14,589
77546	2,779	77025	5,866	77042	8,661	77346	15,391
77003	2,998	77043	5,917	77017	8,718	77379	16,353
77401	3,046	77014	6,029	77081	8,805	77429	17,160
77447	3,164	77503	6,030	77074	8,826	77433	21,004
77030	3,296	77021	6,108	77389	8,859	77084	24,720
77098	3,359	77086	6,114	77450	8,897	77449	29,340
77345	3,377	77067	6,162	77083	8,906		
77031	3,381	77071	6,215	77045	8,949		
77059	3,474	77018	6,332	77090	9,187		

APPENDIX C

Total Confirmed COVID-19 Related Deaths by Zip Code Ordered by Number of Deaths, January 1, 2020 – November 29, 2022							
Zip Code	COVID Deaths	Zip Code	COVID Deaths	Zip Code	COVID Deaths	Zip Code	COVID Deaths
77094	0-5	77056	25	77057	51	77026	84
77010	0-5	77494	25	77536	52	77040	84
77507	0-5	77547	26	77073	52	77060	85
77523	0-5	77345	26	77047	53	77033	85
77046	0-5	77002	26	77506	54	77011	85
77498	0-5	77336	27	77067	55	77063	86
77565	0-5	77562	27	77053	55	77373	87
77362	0-5	77025	27	77429	55	77034	89
77381	0-5	77079	28	77043	57	77396	90
77382	0-5	77389	28	77379	58	77083	90
77380	0-5	77013	31	77503	61	77074	91
77354	0-5	77031	31	77070	61	77375	95
77355	0-5	77065	31	77061	63	77045	96
77535	0-5	77546	32	77012	64	77346	98
77386	0-5	77003	33	77039	66	77017	100
77357	0-5	77587	34	77021	66	77076	102
77365	0-5	77058	34	77028	67	77015	103
77573	7	77388	34	77014	67	77099	103
77584	8	77085	34	77044	67	77009	105
77407	9	77086	37	77038	67	77080	107
77484	10	77051	38	77433	68	77020	108
77477	11	77032	38	77571	69	77082	111
77447	12	77066	39	77081	70	77084	115
77489	12	77048	41	77029	71	77016	116
77006	13	77042	42	77502	73	77022	118
77030	14	77377	43	77450	73	77521	119
77098	14	77096	43	77077	74	77055	124
77027	15	77024	43	77092	74	77093	129
77401	15	77505	44	77090	75	77338	132
77005	16	77018	44	77532	75	77087	132
77581	16	77008	44	77035	75	77036	135
77050	18	77530	45	77504	76	77520	137
77059	23	77071	46	77049	78	77089	137
77068	25	77041	46	77064	79	77088	146
77019	25	77078	47	77339	79	77072	151
77054	0-5	77062	47	77091	81	77449	192
77069	0-5	77004	48	77095	82		
77586	0-5	77037	48	77075	83		
77007	0-5	77598	50	77023	83		

APPENDIX D

Number of Individuals Per 100,000 Residents Fully Vaccinated and Social Vulnerability Index (SVI), Ordered by Residents Vaccinated, December 14, 2020 – November 29, 2022^{xlvi}

Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI
77336	40,031	0.30	77081	56,293	0.81	77388	62,603	0.13	77054	69,965	0.26
77090	44,492	0.70	77373	56,310	0.30	77429	62,742	0.06	77003	70,241	0.61
77532	45,794	0.37	77080	56,896	0.83	77505	62,813	0.24	77057	70,470	0.34
77562	46,003	0.63	77074	56,989	0.86	77015	62,954	0.76	77450	70,885	0.18
77004	48,794	0.53	77061	57,290	0.70	77069	63,133	0.22	77079	71,998	0.27
77520	49,462	0.82	77051	57,355	0.80	77377	63,643	0.24	77041	72,109	0.31
77530	50,953	0.59	77034	57,678	0.67	77375	63,891	0.45	77389	72,582	0.14
77050	50,970	0.71	77049	57,840	0.63	77066	64,247	0.59	77009	73,208	0.62
77067	51,022	0.79	77338	57,984	0.58	77095	64,354	0.23	77094	73,400	NA
77521	51,409	0.64	77088	58,106	0.77	77433	64,383	0.11	77018	74,466	0.48
77503	52,047	0.82	77086	58,321	0.78	77449	64,408	0.36	77006	77,978	0.09
77060	52,431	0.94	77044	58,461	0.41	77084	64,448	0.36	77025	78,364	0.32
77571	52,685	0.38	77502	58,564	0.89	77379	65,038	0.21	77083	79,437	0.53
77013	53,014	0.98	77035	58,598	0.74	77017	65,312	0.66	77002	80,197	0.42
77536	54,087	0.44	77016	58,654	0.89	77082	65,331	0.54	77008	82,016	0.08
77036	54,220	0.93	77033	59,403	0.93	77087	66,525	1.00	77059	84,372	0.05
77039	54,259	0.73	77586	59,408	0.18	77064	66,608	0.47	77007	84,820	0.01
77026	54,295	0.94	77020	59,454	0.89	77345	67,172	0.05	77005	85,630	0.03
77598	54,385	0.57	77075	59,826	0.61	77023	67,263	0.76	77032	88,962	0.99
77091	54,680	0.92	77587	59,960	0.91	77045	67,317	0.84	77401	94,158	0.03
77506	54,725	0.95	77038	60,291	0.50	77055	67,325	0.68	77019	97,856	0.09
77021	55,220	0.74	77022	60,483	0.97	77099	67,380	0.80	77098	98,762	0.07
77028	55,345	0.84	77068	60,785	0.43	77071	67,892	0.68	77027	114,792	0.01
77014	55,409	0.78	77070	61,090	0.49	77011	67,919	0.96	77010	125,028	0.02
77093	55,464	0.97	77047	61,117	0.55	77077	67,962	0.29	77030	131,973	0.28
77073	55,527	0.50	77031	61,258	0.64	77043	67,978	0.52	77024	135,191	0.16
77078	55,624	0.89	77042	61,634	0.38	77029	68,023	0.88	77056	155,532	0.14
77053	55,709	0.72	77065	61,828	0.43	77085	68,186	0.60	77507	189,351	NA
77547	55,770	0.66	77346	61,896	0.12	77072	68,313	0.87	77523	198,166	0.26
77076	55,787	0.86	77040	62,148	0.55	77062	68,856	0.19	77046	199,195	0.10
77037	55,828	0.69	77058	62,195	0.46	77092	69,008	0.75	77498	3,568,056	0.33
77048	56,170	0.85	77063	62,322	0.57	77089	69,143	0.47			
77396	56,199	0.51	77012	62,425	0.99	77339	69,457	0.32			
77504	56,290	0.88	77447	62,514	0.45	77096	69,953	0.39			

^{xlvi} Table excludes data for zip codes with unavailable population and vaccination data.

ENDNOTES

- ¹ Email communication received from David Walker, Data Analyst IV, Texas Department of State Health Services on 5.11.2022.
- ² Email communication received from David Walker, Data Analyst IV, Texas Department of State Health Services on 5.11.2022.
- ³ *FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Children 5 through 11 Years of Age.* (2021, October 29). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age>
- ⁴ *Coronavirus (COVID-19) Update: FDA Takes Key Action by Approving Second COVID-19 Vaccine.* (2022, January 31). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-takes-key-action-approving-second-covid-19-vaccine>
- ⁵ Commissioner, O. of the. (2022, June 17). *Coronavirus (COVID-19) Update: FDA Authorizes Moderna and Pfizer-BioNTech COVID-19 Vaccines for Children Down to 6 Months of Age.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-moderna-and-pfizer-biontech-covid-19-vaccines-children>
- ⁶ Commissioner, O. of the. (2022, July 13). *Coronavirus (COVID-19) Update: FDA Authorizes Emergency Use of Novavax COVID-19 Vaccine, Adjuvanted.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-emergency-use-novavax-covid-19-vaccine-adjuvanted>
- ⁷ Commissioner, O. of the. (2022, August 19). *FDA Roundup: August 19, 2022.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/fda-roundup-august-19-2022>
- ⁸ *Ready Harris.* (n.d.). Retrieved September 8, 2021, from <https://www.readyharris.org/COVID-19-Incentive-Program>
- ⁹ *Houston Health Department to provide up to \$150 in gift cards for COVID-19 vaccinations.* (n.d.). Retrieved September 8, 2021, from <https://www.houstontx.gov/health/NewsReleases/houston-health-department-to-provide-up-to-150-in-gift-cards-for-covid-19-vaccinations.html>
- ¹⁰ CDC. (2022, July 20). *Frequently Asked Questions about COVID-19 Vaccination.* Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html>
- ¹¹ CDC. (2022, August 23). *COVID-19 Vaccination.* Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html>
- ¹² *FDA Authorizes Additional Vaccine Dose for Certain Immunocompromised Individuals.* (August 12, 2021). US Food and Drug Administration. Retrieved August 30, 2021 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-additional-vaccine-dose-certain-immunocompromised>
- ¹³ *FDA Authorizes Booster Dose of Pfizer-BioNTech COVID-19 Vaccine for Certain Populations.* (September 22, 2021). US Food and Drug Administration. Retrieved October 28, 2021 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-booster-dose-pfizer-biontech-covid-19-vaccine-certain-populations>
- ¹⁴ *Coronavirus (COVID-19) Update: FDA Takes Additional Actions on the Use of a Booster Dose for COVID-19 Vaccines.* (October 20, 2021). US Food and Drug Administration. Retrieved October 28, 2021 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-takes-additional-actions-use-booster-dose-covid-19-vaccines>
- ¹⁵ *Coronavirus (COVID-19) Update: FDA Expands Eligibility for COVID-19 Vaccine Boosters.* (2021, November 19). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-covid-19-vaccine-boosters>
- ¹⁶ *Coronavirus (COVID-19) Update: FDA Authorizes Second Booster Dose of Two COVID-19 Vaccines for Older and Immunocompromised Individuals.* (2022, March 29). US Food and Drug Administration. Retrieved on April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-second-booster-dose-two-covid-19-vaccines-older-and-immunocompromised>
- ¹⁷ Commissioner, O. of the. (2022, May 17). *Coronavirus (COVID-19) Update: FDA Expands Eligibility for Pfizer-BioNTech COVID-19 Vaccine Booster Dose to Children 5 through 11 Years.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-pfizer-biontech-covid-19-vaccine-booster-dose>
- ¹⁸ Commissioner, O. of the. (2022, August 31). *Coronavirus (COVID-19) Update: FDA Authorizes Moderna, Pfizer-BioNTech Bivalent COVID-19 Vaccines for Use as a Booster Dose.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-moderna-pfizer-biontech-bivalent-covid-19-vaccines-use>
- ¹⁹ Commissioner, O. of the. (2022, August 31). *Coronavirus (COVID-19) Update: FDA Authorizes Moderna, Pfizer-BioNTech Bivalent COVID-19 Vaccines for Use as a Booster Dose.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-moderna-pfizer-biontech-bivalent-covid-19-vaccines-use>
- ²⁰ Commissioner, O. of the. (2022, October 12). *Coronavirus (COVID-19) Update: FDA Authorizes Moderna and Pfizer-BioNTech Bivalent COVID-19 Vaccines for Use as a Booster Dose in Younger Age Groups.* FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-moderna-and-pfizer-biontech-bivalent-covid-19-vaccines>
- ²¹ Research, C. for B. E. and. (2022). *Novavax COVID-19 Vaccine, Adjuvanted.* FDA. <https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/novavax-covid-19-vaccine-adjuvanted>
- ²² *FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Children 5 through 11 Years of Age.* (2021, October 29). US Food and Drug Administration. Retrieved on April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age>



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